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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,082	10/17/2003	Bo Shen	200309817-1	9062
22879 7590 09/13/2007 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			EXAMINER DALEY, CLIFTON G	
			ART UNIT 2609	PAPER NUMBER
			MAIL DATE 09/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/688,082

Applicant(s)

SHEN, BO

Examiner

Clifton G. Daley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-26 is/are rejected.
- 7) ☒ Claim(s) 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/17/2003.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 14-16, 18-20 and 21-26 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claims 14-16 and 18-20 the recited claims include the judicial exception of an abstract idea (determining responsiveness of a coefficient to a quantization operation). No physical transformation is present to establish a practical application of the idea. The result (responsiveness) is useful and concrete, but not tangible.

Regarding claims 21-26, the recited claims include the judicial exception of an abstract idea (determining an optimal quantization step size). No physical transformation is present to establish a practical application of the idea. The result (optimal quantization step size) is useful and concrete, but not tangible.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, and 9-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Seo et al. (Hereinafter Seo: US 6208688).

Regarding claim 1, Seo teaches a method for deblocking and transcoding a media stream, said method comprising: receiving a coefficient associated with a block of pixels of said media stream (Fig. 1, input to dequantizer 12); performing a deblocking operation on said coefficient to generate a second coefficient (column 5, equations 5 and 6); and performing quantization on said second coefficient to generate a transcoded coefficient (column 5, equation 7).

Regarding claim 2, Seo teaches the method as recited in claim 1 wherein said coefficient is a quantized coefficient (see Fig. 5 and column 3, lines 13-19).

Regarding claims 3 and 9, Seo teaches the method and analogous apparatus (deblocking-capable transcoder) as recited in claim 2 wherein said receiving said coefficient comprises: receiving said quantized coefficient from a pre-encoded bit stream (Fig. 1, input to dequantizer 12); performing inverse quantization on said quantized coefficient to generate a first dequantized coefficient, said inverse quantization having a first step size (column 3, lines 18-20).

Regarding claims 4 and 10, Seo teaches the method and analogous apparatus as recited in claim 3 wherein said quantization has a second step size, wherein said second step size is greater than said first step size (column 3, lines 20-22, and lines 48-53).

Regarding claim 5, Seo teaches the method as recited in claim 2 wherein said quantized coefficient is a discrete cosine transform (DCT) coefficient (column 4, lines 54-58).

Regarding claim 11, Seo teaches the deblocking-capable transcoder as recited in claim 9 wherein said quantized coefficient is a discrete cosine transform (DCT) coefficient (column 3, lines 13-19).

4. Claims 14-16, 18 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Sorial et al. (Hereinafter "Sorial": Hani Sorial, William E. Lynch and Andre Vincent, "Selective Requantization for transcoding of MPEG Compressed Video", 2000 IEEE, pp. 217-220).

Regarding claim 14, Sorial teaches a method for determining responsiveness of a coefficient of a media stream, said method comprising: receiving a plurality of first coefficients and a plurality of second coefficients associated with plurality of blocks of pixels of said media stream, a first quantization step size, a second quantization step size, and a quantization operation (Section 2, paragraph 2 and Equation 1); performing said quantization operation for a first coefficient of said plurality of first coefficients and a second coefficient of said plurality of second coefficients, said quantization operation based on said first quantization step size and said second quantization step size (Equation 1); and determining whether said first coefficient is responsive based on said quantization operation (Fig. 4b).

Regarding claim 15, Sorial teaches the method as recited in claim 14 wherein said quantization operation is a uniform scalar quantizer with rounding to nearest (page 219, right column, second paragraph, i.e. linear mapping, and Equation 1).

Regarding claim 16, Sorial teaches the method as recited in claim 14 wherein said quantization operation is a uniform scalar quantizer with rounding down (page 219, right column, second paragraph, i.e. linear mapping, and Equation 1).

Regarding claim 18, Sorial teaches the method as recited in claim 14 further comprising repeating said performing and said determining for said plurality of first coefficients (page 218, left column, lines 3-4. i.e. block-by-block basis).

Regarding claim 20, Sorial teaches the method as recited in claim 14, wherein said plurality of first coefficients are quantized coefficients and said plurality of second coefficients are transcoded coefficients (page 217, section 2, second paragraph, i.e. quantized input and requantized version (transcoder)).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 6 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo in view of Sorial and further in view of Triantafyllidis et al. (Hereinafter

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"Triantafyllidis": G. A. Triantafyllidis, D. Tzovaras and M. G. Strintzis, "Blocking Artifact Reduction in Frequency Domain", 2001 IEEE, pp 269-272).

Seo teaches the method and analogous apparatus as recited in claim 4.

Seo does not teach the limitation wherein said performing said deblocking operation comprises: determining whether said first dequantized coefficient is responsive; if said first dequantized coefficient is responsive, deblocking said first dequantized coefficient such that said second coefficient is a deblocked coefficient; and if said first dequantized coefficient is not responsive, said second coefficient is said first dequantized coefficient.

However, Sorial teaches a method of determining whether said first dequantized coefficient is responsive (Fig. 4b); and if said first dequantized coefficient is not responsive, said second coefficient is said first dequantized coefficient (Fig. 4a).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Sorial's determination of responsiveness in Seo's transcoding process, the motivation being to reduce Requantization errors (Sorial: Abstract, lines 2-3).

Sorial does not teach the limitation wherein if said first dequantized coefficient is responsive, deblocking said first dequantized coefficient such that said second coefficient is a deblocked coefficient.

However, Triantafyllidis teaches a method of deblocking said first dequantized coefficient such that said second coefficient is a deblocked coefficient (Introduction, second paragraph).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Triantafyllidis' deblocking method in the transcoding process of Seo combined with Sorial, the motivation being to reduce blocking artifacts (Triantafyllidis: Conclusions, lines 3-4).

7. **Claims 7 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Seo combined with Sorial and Triantafyllidis in view of Mine (US 6987808).

Seo combined with Sorial and Triantafyllidis teaches the method and analogous apparatus as recited in claim 6.

Seo combined with Sorial and Triantafyllidis does not teach the limitation wherein said determining whether said first dequantized coefficient is responsive comprises: accessing a table based on said first step size, said table comprising a distribution of at least one responsive coefficient based on said second step size; and determining whether said first dequantized coefficient at said second step size is responsive.

However, Mine discloses the use of a table in a transcoding process (column 2, lines 13-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a table in the transcoding process of Seo combined with Sorial and Triantafyllidis, the motivation being to improve computation efficiency.

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8. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Seo in view of Hanamura et al. (Hereinafter "Hanamura": US 6587508).

Seo teaches the method as recited in claim 4.

Seo does not teach the limitation to the method further comprising determining an optimal value for said second step size based on quantization error for said quantized coefficient.

However Hanamura discloses a method comprising determining an optimal value for said second step size (i.e. re-quantization parameter) based on quantization error for said quantized coefficient (column 33, line 65 to column 34, line 5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Hanamura's optimization method with Seo's teaching, the motivation being to stabilize rate control in transcoding (Hanamura: column 11, lines 14-15).

9. Claims 19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sorial in view of Mine.

Regarding claim 19, Sorial teaches the method as recited in claim 18.

Sorial does not teach the limitation further comprising generating a coefficient responsiveness table comprising a distribution of responsiveness of said plurality of first coefficients for said first quantization step size, wherein a first axis corresponds to said plurality of first coefficients and said second axis corresponds to said second quantization step size.

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However, Mine discloses the use of a table in a transcoding process (column 2, lines 13-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a table in Sorial's transcoding process, the motivation being to improve computation efficiency.

Regarding claim 21, Sorial teaches a method for determining an optimal quantization step size, said method comprising: receiving an input quantization step size and a plurality of coefficients of a macroblock (page 219, right column, lines 8-9, i.e. CBR transcoding of MPEG-2 compressed video); determining a plurality of candidate quantization step sizes (page 219, right column, see algorithms for intra macroblock and non-intra macroblock); and determining said optimal quantization step size from said plurality of quantization step sizes based on a second table (page 219, right column, see algorithms for intra macroblock and non-intra macroblock).

Sorial does not teach the use of a first and second table for determining candidate step sizes and optimal step size respectively.

However, Mine discloses the use of a table in a transcoding process (column 2, lines 13-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use tables in Sorial's transcoding process, the motivation being to improve computation efficiency.

Sorial does not teach the limitation of determining a magnitude distribution of non-zero coefficients of said plurality of coefficients.

However, Mine discloses determining a magnitude distribution of non-zero coefficients of said plurality of coefficients (column 10, lines 52-54).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to determine a magnitude distribution of non-zero coefficients of said plurality of coefficients in Sorial's transcoding process, the motivation being to detect the presence or absence of edges (Mine: column 10, lines 55-56).

Regarding claim 22, Sorial in combination with Mine teaches the method as recited in claim 21 wherein said first table is a quantization error table (Sorial: page 218, section 4, lines 2-4).

Regarding claim 23, Sorial in combination with Mine teaches the method as recited in claim 21 wherein said second table is a coefficient responsiveness table Sorial: page 219, after algorithms, with line 1 starting "where the above ...", lines 7-8, i.e. not responsive, and lines 8-10, i.e. responsive).

Allowable Subject Matter

10. **Claim 17** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

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base claim and any intervening claims. The recited method of determining responsiveness based on an upper and a lower bound is not found in the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifton G. Daley whose telephone number is 571-270-3144. The examiner can normally be reached on Monday - Friday 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alexander Eisen

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A handwritten signature in black ink, appearing to be 'N. A. Chini'.

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CGD

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